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FACT SHEET

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Preserving Fish

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With the rising costs of meat and cheese protein foods, consumers have become increasingly interested in fishing as an additional way to obtain dietary protein. Fresh caught fish needs to be properly preserved so it can be safely used for future food needs. The four most popular methods of fish preservation are freezing, canning, smoking, and pickling. This publication describes each method briefly.

Top quality fresh fish is essential for fish preservation. Of all flesh foods, fish is the most susceptible to tissue decomposition, development of rancidity, and microbial spoilage. Keep the fish you catch alive as long as possible. A metal link bag will permit fish to remain alive longer in the water than a stringer. Spoilage and slime-producing bacteria are present on every fish and multiply rapidly on a dead fish held in warm surface water.

Fish begins to deteriorate as soon as it leaves the water. To delay spoilage, clean the fish as soon as possible. Thorough cleaning of the body cavity and chilling of the fish will prevent spoilage. Fish spoilage occurs rapidly at summer temperatures; spoilage is slowed down as freezing temperatures are approached.

CANNING FISH

Processing Requirements

Fish is a low acid food and can be processed safely only at temperatures reached in a steam pressure canner. Failure to heat process fish at 240°F. or higher may allow spores of the dangerous heat resistant bacteria, Clostridium botulinum, to survive, germinate, grow, and produce its deadly poison. The poison produced by botulinum bacteria causes botulism, a deadly food poisoning. The addition of small amounts of vinegar, or packing fish in tomato juice or tomato paste does not remove the requirement for heat processing fish in a pressure canner.

The U.S. Department of Interior strongly suggests that no home canned fish product be packed in containers larger than one pint. Use standard heat tempered canning jars. All processing times in this publication are for one pint containers. Wide-mouth jars will be easier to fill than narrower ones. Recommended headroom or empty space at the top of the jar is ¼-inch when the fish is packed without added liquid and ½-inch when packed with a liquid or sauce. Avoid using hard water, especially water with a high iron, calcium, or magnesium content. Hard water will discolor the product and may cause off flavors.

Because of physical and chemical composition, certain species of fish produce more palatable canned fish than others. Minnesota homemakers have reported good tasting products when using suckers, whitefish, northern pike, and carp. Some of the more popular canned fish products involve packing the fish in a mixture of catsup or tomato juice, vinegar, onions, and other seasonings. A general method for canning plain fish and a recipe using a tomato-flavored sauce with the canned fish follows.

General Method for Canning Fish (plain)

Use only good quality, clean, fresh fish. Allow 2¼ to 3 pounds of whole fish for each pint of canned fish. To clean, remove the heads, fins, and tail if present. Remove skin if desired. If the fish is slimy, a solution of 1 tablespoon vinegar to 2 quarts water helps remove the slime. The color of some fish can be improved by soaking the flesh in a brine of ½ cup salt to 1 gallon of water for 30 minutes. This brine should be made just before use, used once, and discarded.

Rinse the fish in clean water.

Cut the cleaned fish into jar-sized lengths.

Pack fish into jars solidly. Leave ¼ inch empty or headroom at top. The fish will shrink during processing and juices will collect in the jar.

Add ½ teaspoon salt to each pint jar, if desired.

Wipe jar rims, place lid on jar and tighten the screw band.

Place jars in pressure canner*. Exhaust air from canner for 10 minutes. Put on or close pressure regulator. Bring pressure to 10 pounds (240°F.). Process the fish for 100 minutes. Allow the pressure canner to return to 0 pounds.

Remove jars from canner. Place jars upright on a dry, nonmetallic surface (towels, board, or newspaper may be used).

Fish Canned with Seasoned Tomato Sauce ("mock" salmon)

1 c. catsup
1 c. vinegar
½ c. water
3 T. (scant) salt
¼ c. minced onion
2 bay leaves, crumbled

Combine and heat the above ingredients. This makes enough sauce for about 8 pints.

Clean and prepare fish for canning as described earlier. Omit the soak in brine.

Pack fish in pint jars to ¾ inch at top.

Cover fish with sauce leaving ½ inch headroom.

Wipe jar rims, place lid on the jar, and tighten the screw band.

Place jars in pressure canner and process as described for 90 minutes at 10 pounds (240°F.).

PICKLING

Pickling is an easy method of preserving fish for future use. You can pickle raw or cooked fish. It does not require heat processing in a pressure canner. Pickled fish must be stored in the refrigerator at no higher than 40°F. (refrigerator temperature) and for best flavor, be used within 4 to 6 weeks. Only a few species of fish are preserved commercially by pickling, but almost any type of fish may be pickled at home. Refrigerate the fish during all stages of the pickling process.

Ingredients for Pickled Fish

Fish—Use only fresh, high quality fish.

Water—Avoid hard water, especially water with a high iron, calcium, or magnesium content. Hard water can cause off color and flavors.

Vinegar—Use distilled, white vinegar with an acetic acid content of at least 4 percent (40 grains means the same thing). This percent of acetic acid is needed to stop bacterial growth. Check the acetic acid content on the vinegar bottle label.

Salt—Use high grade, pure canning or pickling salt. It does not contain calcium or magnesium compounds which may cause off color and flavors in pickled fish.

Spices—Best results are obtained when fresh, whole spices are used.

*For detailed instructions about the operation of a pressure canner, see Extension Folder 100, "Home Canning of Fruits and Vegetables."

General Recipe for Precooked Pickled Fish

Soak fish in a weak brine (1 cup salt to 1 gallon of water) for 1 hour.

Drain the fish, pack in heavy glass, crock, enamel, or plastic container in a strong brine (2½ cups salt to 1 gallon of water) for 12 hours at refrigerator temperatures (40° to 45°F.).

Rinse the fish in cold water.

Combine the following ingredients in a large pan or kettle. This makes enough for 10 pounds of fish.

¼ oz. bay leaves
2 T. allspice
2 T. mustard seed
1 T. whole cloves
1 T. pepper, ground
1 to 2 T. hot, ground, dried pepper
½ lb. onions, sliced
2 qt. distilled vinegar
5 c. water (avoid hard water of high mineral content)

Bring to a boil, add fish and simmer for 10 minutes until fish is easily pierced with a fork.

Remove fish from liquid, place on a single layer on a flat pan. Refrigerate and cool quickly to prevent spoilage.

Pack cold fish in clean glass jars, adding a few whole spices, a bay leave, freshly sliced onions, and a slice of lemon.

Strain the vinegar solution, bring to a boil, and pour into jars until fish is covered.

Seal the jar immediately with 2 part sealing lid, following the manufacturer's instructions.

Pickled fish must be stored as stated in general directions.

Pickled Fish (uncooked method)

Cut thoroughly cleaned fish into small chunks.

Soak in a brine of 1½ cups salt to 4 quarts water for 48 hours in the refrigerator.

Drain the salt water and soak the fish in distilled white vinegar to cover for 48 hours in the refrigerator.

Combine the following ingredients, boil for 5 minutes and cool. This makes enough pickling solution for 5 to 6 pints.

8 bay leaves
4 c. white vinegar
2½ c. sugar
4 t. mustard seed
2 t. whole cloves
2 t. whole allspice
2 t. whole black pepper

Pour the vinegar off the fish pieces. Pack the fish into wide-mouth pint jars, alternating fish layers with sliced onions. Several slices of lemon may be added to each jar.

Pour the spiced vinegar over the fish and refrigerate. Let stand for 5 days before using.

Keep in refrigerator and use within 4 to 6 weeks.

SMOKING FISH

Smoking has long been used as a means of temporarily preserving fish. The steps in the smoking process are necessary not only for safe preservation, but also to produce good flavor and aroma. Carp, suckers, buffalo catfish, salmon, trout, and chubs may be successfully smoked. A safe, high quality product can be produced using the following brining and smoking procedures.

Certain steps in the brining and smoking process require careful attention.

Brining

- Use correct amount of salt in the brine.
- Use enough brine for a given amount of fish.
- The temperature during brining must be no higher than 40°F.
- Use similar size and kinds of fish in the brine.

Smoking

- There should be uniform heat treatment of all fish in the smoking chamber.
- The fish flesh should be maintained at 180°F. for the total smoking period.

Steps for Safe Smoking

Use freshly caught, dressed fish whole or filleted. Wash fish thoroughly.

Fish for smoking must be brined.
1½ cups salt to 1 gallon water—12 hours in refrigerator
4 cups salt to 1 gallon cold water—15 minutes

Remove from brine, rinse.

Place the short stem of meat thermometer in thickest portion of flesh of largest fish.

Put fish in smoker when air temperature is 100°F. (you need a second thermometer to measure this).

During smoking, air temperature should rise to 225°F.

Fish flesh should reach 180°F. and be kept there 30 minutes.

Smoked fish must be stored in refrigerator—use within 1 month.

FREEZING FISH

This is the simplest method of fish preservation. A good quality frozen product requires the following:

Careful handling of the fish after catching.
Wrapping material that prevents freezer burn and the development of rancid flavors.
A freezer storage temperature of 0°F. or lower.

To Freeze Fish

Remove the guts and thoroughly clean the fish soon after catching. While it is better to freeze cleaned fish, you may freeze winter-caught fish whole just as they come out of the water.

Prepare the fish in the same way as for table use. Cut large fish into steaks or fillets. Freeze small fish whole.

Wrap the fish in heavy duty aluminum foil—plastic-type film or heavy duty freezer bags. Separate layers of fish with two thicknesses of packaging material for easier thawing. Store fish at 0°F. or lower. When ready to use, thaw in the refrigerator.

Small fish, such as sunfish and panfish, can be frozen in a block of ice. Place the fish in a pan, coffee can, or any clean, watertight container. Cover the fish with ice water and place in the freezer.

The storage life of good quality frozen fish held at 0°F. or lower follows:

Northern pike, lake trout, and smelt . . . . . 4 to 6 months
Bluegills, bass, crappies, and sunfish . . . . . 7 to 9 months
Walleyes and yellow perch . . . . . 9 months or more

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